

## **WARNING**

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# Charles Darwin University

## Final Examination

Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 2, 2018				

HIT337 – Distributed Development	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes
INSTRUCTIONS TO CANDIDATES		
The examination has <b>2</b> sections		
Section A:	Short Answer Questions: Answer ALL 5 questions	
Suggested Time:	60 minutes (15 marks)	
Section B:	Short Answer Questions: Answer ONLY 1 question	
Suggested Time:	120 minutes (25 marks)	
A4 Sheet of Notes must be hand-written and submitted with final exam paper. Note that questions ARE NOT of equal value.		
EXAM CONDITIONS		
<u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.		
This is a RESTRICTED OPEN BOOK examination		
No calculators are permitted		
One A4 sheet of handwritten double-sided notes permitted		
Hard copy, unannotated English translation dictionary only		
ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED	
No additional printed material is permitted	1 x 16 Page Book	

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DOUBLE-SIDED.

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## **Section A**

### **Short Answer Questions**

**Total No of Marks for this section: 15**

This section should be answered in the Answer Booklet provided.

Marks for each question are indicated.

Suggested Time allocation for Section A: 60 mins

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#### **Question 1**

What is an enterprise and what kind of applications stem from them?

(2 marks)

#### **Question 2**

Provide reasons why a web-based application can help build enterprise applications

(2 marks)

#### **Question 3**

Pick either multi-tier framework or MVC and write a paragraph describing it using five main points

(5 marks)

#### **Question 4**

Describe the process to retrieve a web page from a server and explain why it is stateless

(3 marks)

#### **Question 5**

Describe the object serialisation technology JSON and why it can help with web-based applications

(3 marks)

## Section B

### Short Answer Questions

**Total No of Marks for this section: 25**

This section should be answered in the Answer Booklet provided.

Marks for each question are indicated.

Suggested Time allocation for Section B: 120 mins

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Students must choose **ONLY 1** question: dotnet or java EE

#### Question 1: dotnet

- a) Name three methods to preserve user data and app state between requests. (3 marks)
- b) Describe how the entity framework helps developers work with data. (3 marks)
- c) You have a table that was created with the following code:
- ```
create table employee
(
    id number,
    username varchar(30),
    status varchar(30)
);
```
- i. Develop a dotnet class that represents this database table in an entity framework model. (4 marks)
- ii. Create a LINQ query that uses your class to select all employees who have the status 'Manager'. (5 marks)
- iii. Write a controller that has an index action that passes the results from your query as a model into a view. (5 marks)

d) Take in two parameters, one called “key” and another called “message”:

`http://localhost/Message/Write?key=alpha&message=Hello_There`

- i. Provide a properly named controller with an action that will do the following: Get the value of a http session integer with the same name as the value of the key request parameter. The value of this attribute will be an Integer. That will then be passed to a view in whatever way you think is best.
- ii. Provide a razor view that if this integer is greater than 0 should:
  - Output the value of the message parameter in <h1> tags that many times.

If the integer is less than or equal to 0 it should:

- Output the following message: “No message was output”.

(5 marks)

## Question 2: Java EE

a) Describe the servlet lifecycle.

(3 marks)

b) Explain why you would put calls to a database using transaction methods with examples.

(3 marks)

c) You have a table which was created with the following code:

```
create table employee
(
  id number,
  username varchar(30),
  status varchar(30)
);
```

Assume that you can connect to the database with `getConnection()` which returns an instance of `Connection`:

i. Write some code using a servlet that reads variables from a post request and inserts them into the database.

(5 Marks)

ii. Write another piece of code using a servlet that prints out all of the data in the table using a `PrintWriter` as a HTML table.

(5 Marks)

iii. Write the relevant parts of the `web.xml` to handle requests to these servlets.

(4 Marks)

d) Take in two parameters, one called “key” and another called “message”:

`http://localhost/my_webapp/my_servlet?key=alpha&message=Hello_There`

Provide a JSP page that will do the following:

- The JSP should: Get the value of a session attribute with the same name as the value of the key request parameter.
- The value of this attribute will be an Integer. If this integer is greater than 0 then it should:
  - o Output the value of the message parameter in <h1> tags that many times.
- If the integer is less than or equal to 0 it should:
  - o Output the following message: “No message was output”.

(5 marks)